

# 6BF11

## Dual-Control Sharp-Cutoff Pentode— Beam Power Tube

### DUODECAR TYPE

For Combined FM-Sound-Detector & AF-Power-Amplifier  
Applications in Low- B+ TV Receivers

### ELECTRICAL CHARACTERISTICS

#### Bogey Values

Heater Voltage (AC or DC) . . . . .	$E_h$	6.3	V
Heater Current . . . . .	$I_h$	1.200	A ←
Direct Interelectrode Capacitances			
Without external shield			
Pentode Unit:			
Grid No.1 to plate. . . . .	$c_{g1-p}$	0.036	pF
Grid No.3 to plate. . . . .	$c_{g3-p}$	3.2	pF
Input: G1 to (K, IS, G3, G2, H) . . . . .	$c_i$	6.5	pF
Grid No.3 to all: G3 to (K, IS, P, G2, G1, H) . . . . .	$c_{g3-all}$	8.0	pF
Grid No.1 to Grid No.3. . . . .	$c_{g1-g3}$	0.11	pF
Beam Power Unit:			
Grid No.1 to plate. . . . .	$c_{g1-p}$	0.24	pF
Input: G1 to (K, G3, G2, IS, H) . . . . .	$c_i$	13	pF
Output: P to (K, G3, G2, IS, H) . . . . .	$c_o$	10	pF
Coupling:			
Pentode plate to beam-power plate . . . . .	$c_{p-p}$	0.13	pF

For the following characteristics, see Conditions

		Pentode Unit	Beam Power Unit	
Plate Resistance (Approx.) $r_p$		150	30	k $\Omega$
Transconductance				
Grid No.1 to plate . . . . .	$g_m(g1-p)$	1000	8600	$\mu$ mho
Grid No.3 to plate . . . . .	$g_m(g3-p)$	400	-	$\mu$ mho
Zero-Signal Plate				
Current . . . . .	$I_{b0}$	1.3	36	mA
Max-Signal Plate Current	$I_b$	-	40	mA
Zero-Signal Grid-No.2				
Current . . . . .	$I_{c2}$	2	3	mA
Max-Signal Grid-No.2				
Current . . . . .	$I_{c2}$	-	9	mA
Total Harmonic				
Distortion. . . . .		-	10	%
Max-Signal Power Output.	$P_o$	-	2.4	W
Cutoff DC Grid-No.1				
Voltage for $I_b = 10 \mu A$ .	$E_{c1(co)}$	-4.5	-	V
Cutoff DC Grid-No.3				
Voltage for $I_b = 10 \mu A$ .	$E_{c3(co)}$	-4.5	-	V

#### Conditions

Heater Voltage . . . . .	$E_h$	—Bogey value—	V
DC Plate Supply Voltage .	$E_{bb}$	150 145	V

← Indicates a change.



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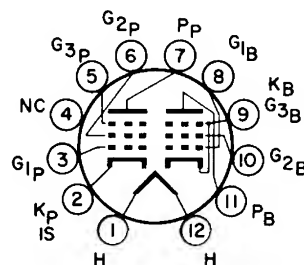
Grid No.3. . . . .	-	Connected to negative end of $R_k$	-	V
DC Grid-No.2 Supply Voltage. . .	$E_{cc2}$	100	110	V
Grid No.1. . . . .	-	Connected to negative end of $R_k$	-	
DC Grid-No.1 Voltage . . . . .	$E_{c1}$	-	-6	V
Peak AF Grid-No.1 Voltage. . . .	$e_{g1m}$	-	6	V
Cathode Resistor . . . . .	$R_k$	560	-	$\Omega$
Load Resistor . . . . .	$R_L$	-	3000	$\Omega$

## MECHANICAL CHARACTERISTICS

Operating Position . . . . .	Any
Type of Cathodes . . . . .	Coated Unipotential
Maximum Overall Length . . . . .	2.625 in
Maximum Seated Length. . . . .	2.250 in
Maximum Diameter . . . . .	1.188 in
Dimensional Outline (JEDEC 9-59) . . . .	See General Section
Envelope . . . . .	JEDEC T9
Base . . . . .	Small-Button Duodecar 12-Pin (JEDEC E12-70)

## TERMINAL DIAGRAM (Bottom View)

- Pin 1 - Heater
- Pin 2 - Pentode Cathode, Internal Shield
- Pin 3 - Pentode Grid No.1
- Pin 4 - No Internal Connection
- Pin 5 - Pentode Grid No.3
- Pin 6 - Pentode Grid No.2
- Pin 7 - Pentode Plate
- Pin 8 - Beam-Power Grid No.1
- Pin 9 - Beam-Power Cathode, Beam-Power Grid No.3
- Pin 10 - Beam-Power Grid No.2
- Pin 11 - Beam-Power Plate
- Pin 12 - Heater



12EZ

## DESIGN-MAXIMUM RATINGS

For operation with Pentode Unit as FM Sound Detector  
and Beam Power Unit as AF Power Amplifier

		Pentode Unit	Beam Power Unit	
DC Plate Voltage . . . . .	$E_b$	330	165	V
DC Grid-No.3 (Control-Grid) Voltage . . . . .	$E_{c3}$	28	-	V
DC Grid-No.2 (Screen-Grid) Supply Voltage. . . . .	$E_{cc2}$	330	-	V
DC Grid-No.2 Voltage . . . .	$E_{c2}$	See Grid-No. 2-Input Rating Chart at front of Receiving Tube Section		V



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		Pentode Unit	Beam Power Unit	
Positive DC Grid-No. 1 (Control-Grid) Voltage. . . . .	$E_{c1}$	0	-	V
Heater-Cathode Voltage				
Peak . . . . .	$e_{hkm}$	$\pm 200$	$\pm 200$	V
Average <sup>a</sup> . . . . .	$E_{hk(av)}$	100	100	V
Heater Voltage (AC or DC). . . . .	$E_h$	5.7 to 6.9		V
Average Cathode Current <sup>a</sup> . . . . .	$I_{k(av)}$	-	65	mA
Grid-No. 2 Input. . . . .	$P_{g2}$	-	1.8	W
For $E_{c2} \leq 165$ V. . . . .	-	1.1	-	W
For $E_{c2} > 165$ V and $\leq 330$ V . . . . .		See Grid-No. 2- Input Rating Chart at front of Receiving Tube Section		
Plate Dissipation. . . . .	$P_b$	1.7	6.5	W

## MAXIMUM CIRCUIT VALUES

		Pentode Unit	Beam Power Unit	
Grid-No. 1-Circuit Resistance:	$R_{g1(ckt)}$			
For fixed-bias operation . . . . .	-	250	250	k $\Omega$
For cathode-bias operation . . . . .	-	500	500	k $\Omega$

<sup>a</sup> Measured with a dc meter.



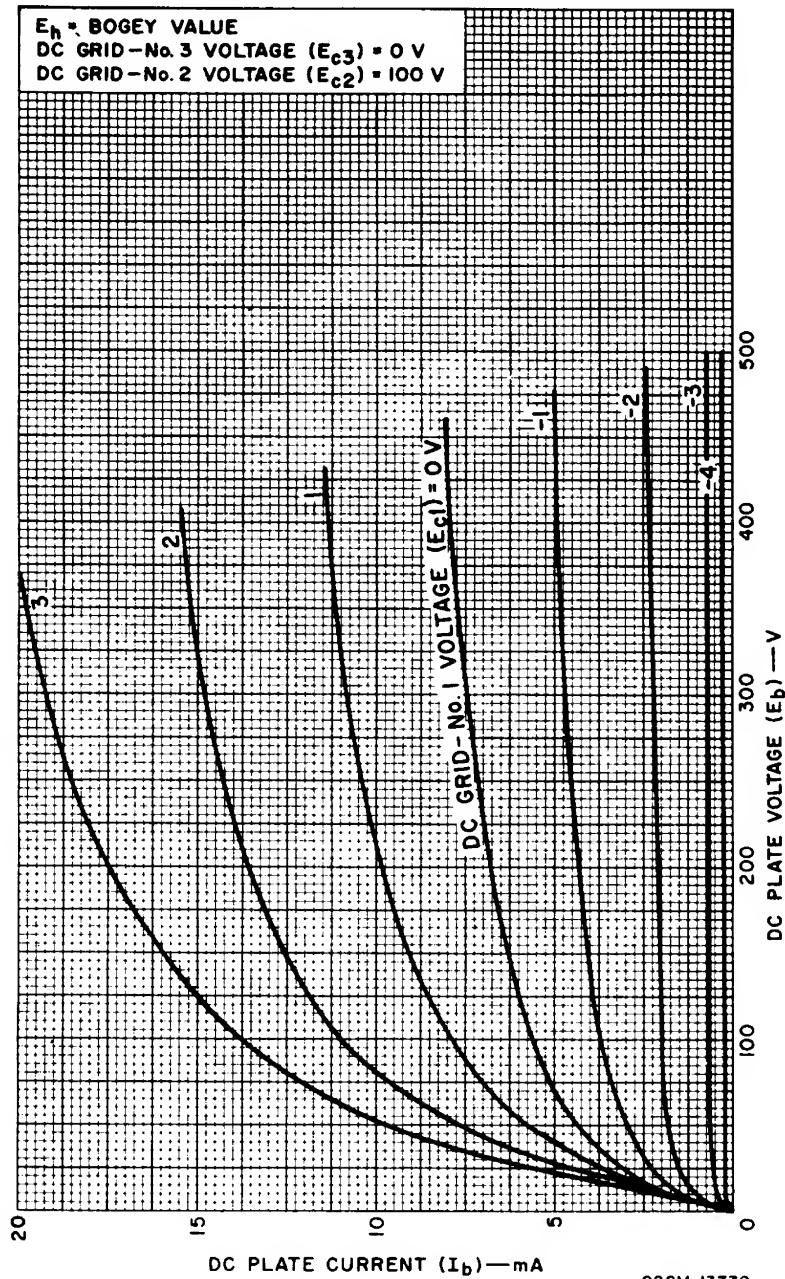
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## Typical Plate Characteristics

Pentode Unit



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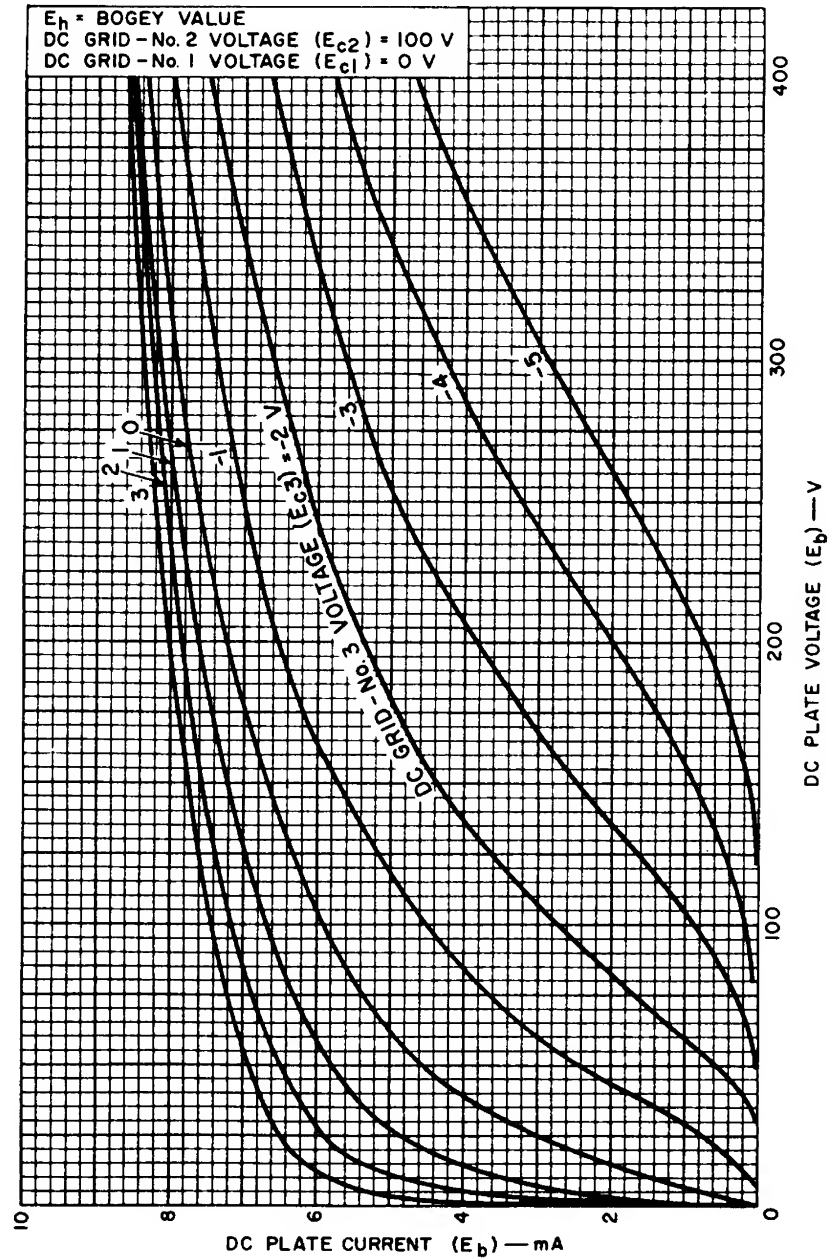
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## Typical Plate Characteristics

Pentode Unit



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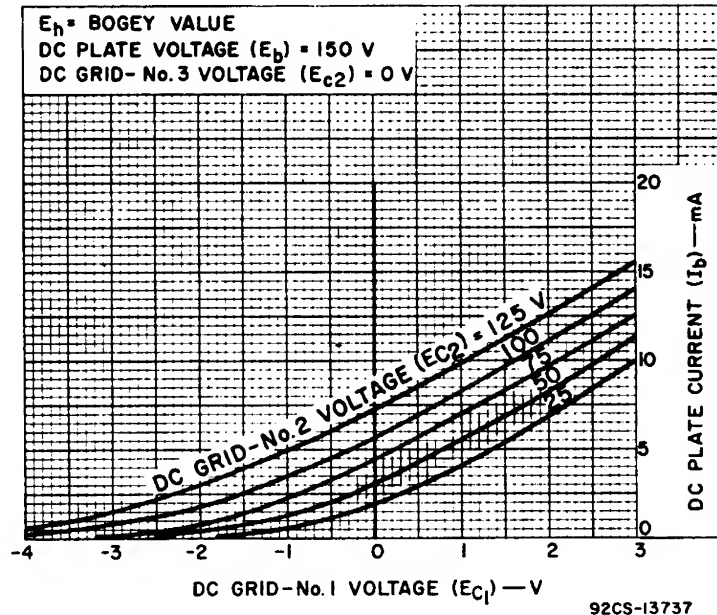
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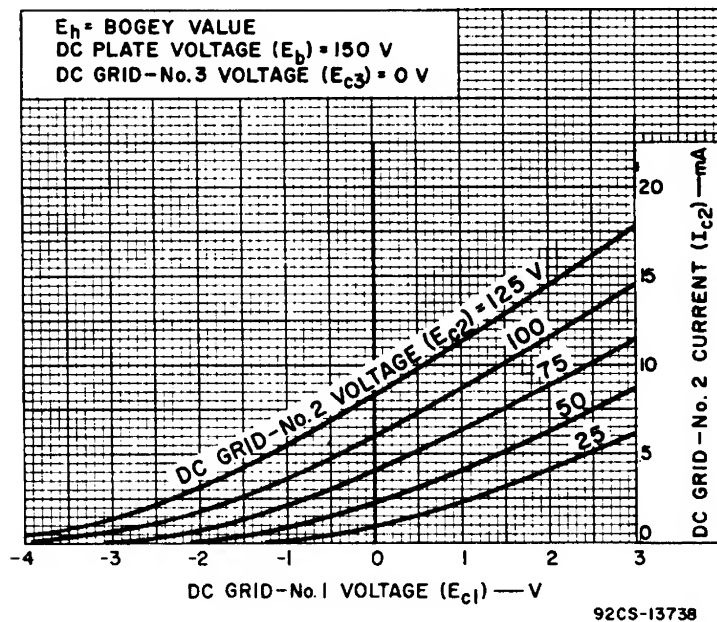
## Typical Transfer Characteristics

Pentode Unit

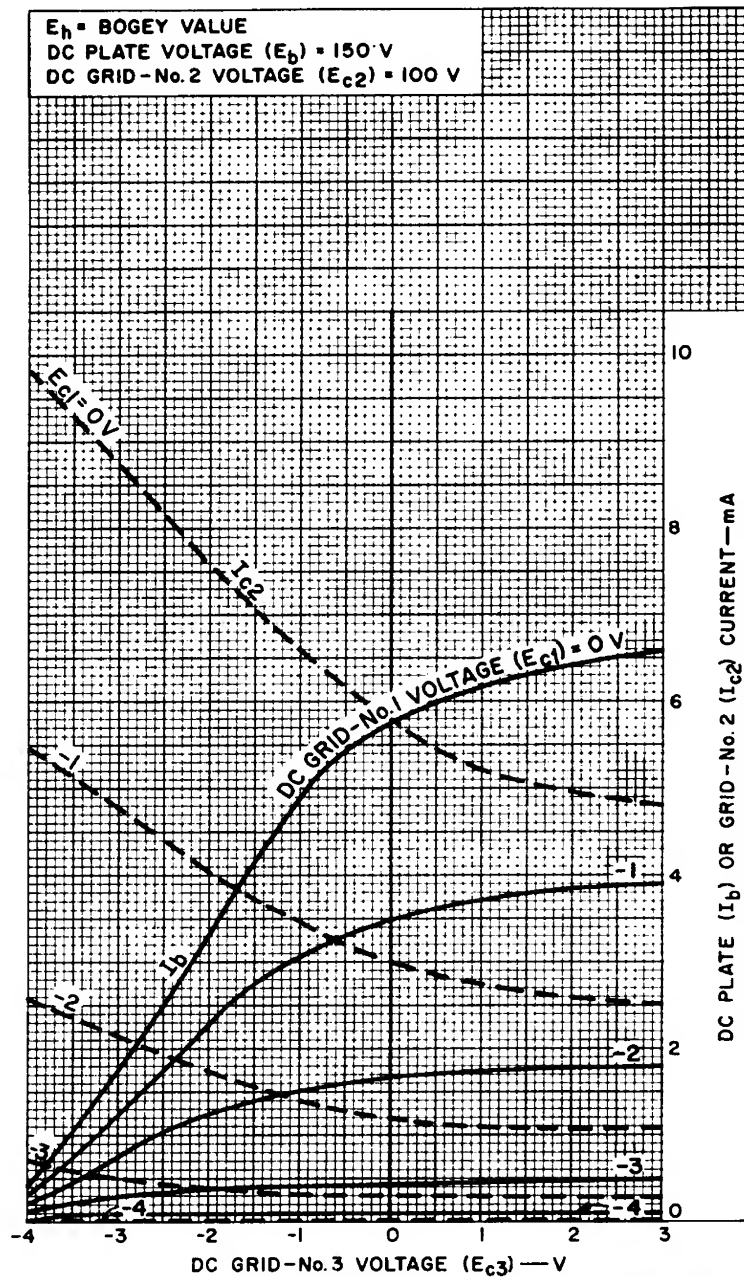


## Typical Transfer Characteristics

Pentode Unit



# Typical Transfer Characteristics Pentode Unit



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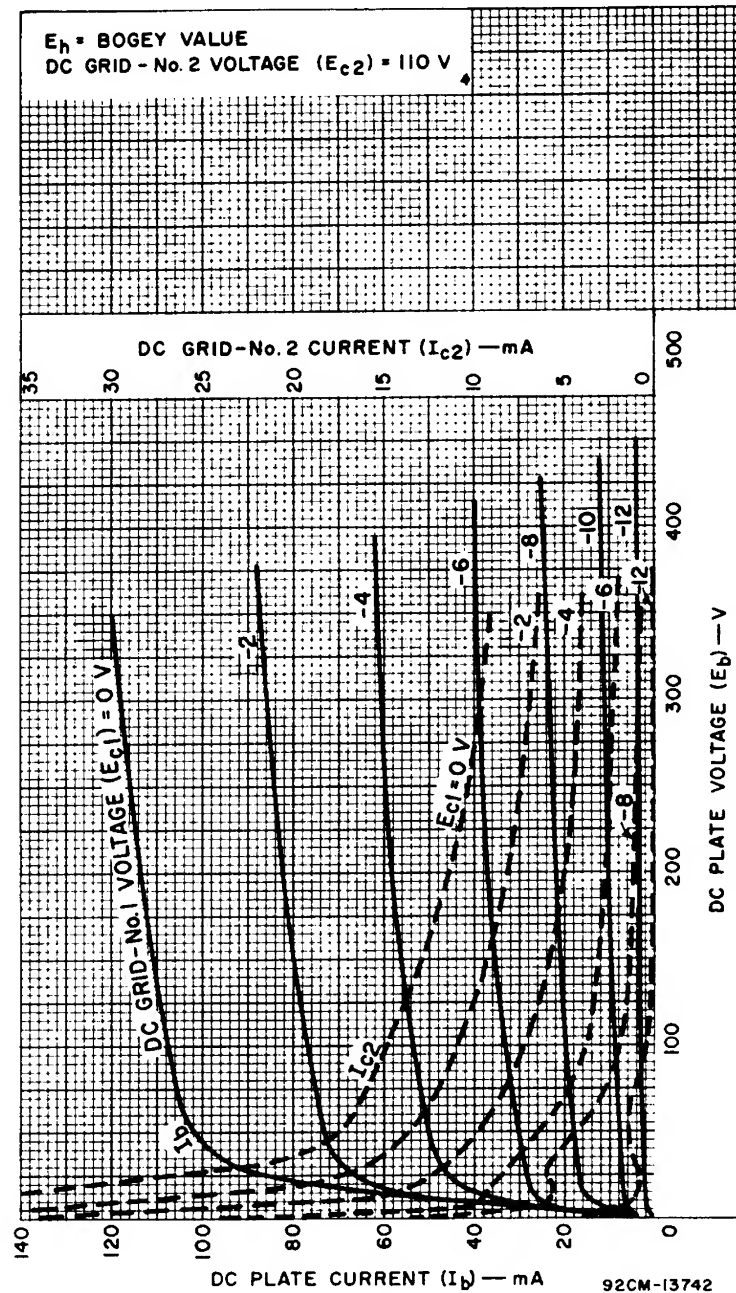
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## Typical Characteristics

Beam Power Unit



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